

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Water

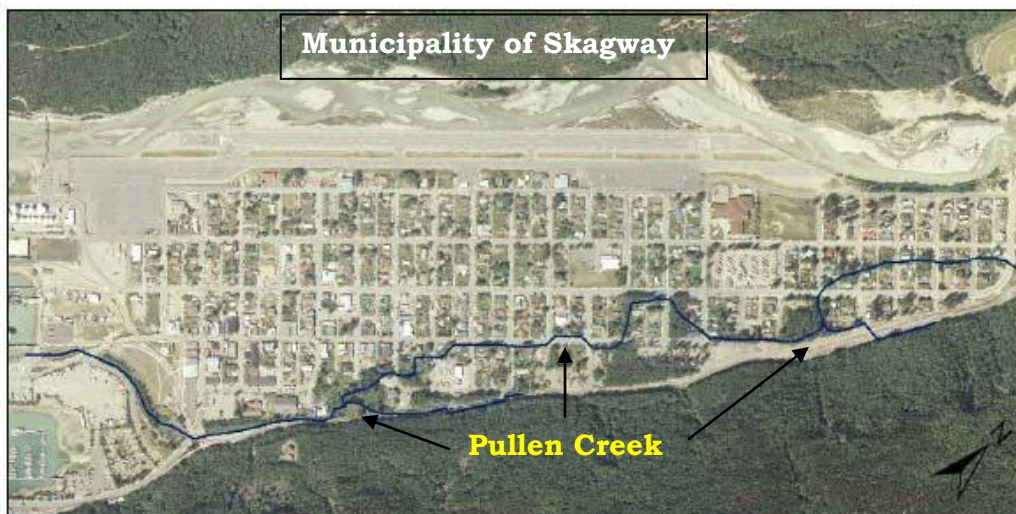
**Fact Sheet: Total Maximum Daily Load for Residue in the
Waters of Pullen Creek in Skagway, Alaska**

TMDL AT A GLANCE

<i>Water-Quality Impaired? :</i>	Yes
<i>Hydrologic Unit Code:</i>	10303404
<i>Pollutants of Concern:</i>	Metals (cadmium, copper, lead, and zinc)
<i>Designated Uses Affected:</i>	Growth and propagation of fish, shellfish, other aquatic life and wildlife
<i>Major Source(s):</i>	Historical mining transport and transfer operations
<i>Loading Capacity:</i>	Varies by metal (see summary below)

Metal	Loading Capacity (mg/kg)	Wasteload Allocation (mg/kg)	Load Allocation (mg/kg)	Margin of Safety (mg/kg)	Maximum Observed (mg/kg)	Percent Reduction ^a
Total Cadmium	0.596	–	0.5364	0.0596	1.6	63%
Total Copper	35.7	–	32.13	3.57	120	70%
Total Lead	35	–	31.5	3.5	330	89%
Total Zinc	123.1	–	110.79	12.31	480	74%

a. Reductions are calculated based on maximum concentration observed among all stations on Pullen Creek.



Scope of the TMDL

A TMDL represents the amount of a pollutant the waterbody can receive while maintaining compliance with applicable water quality standards. This Total Maximum Daily Load (TMDL) establishes limits for metals in Pullen Creek. A TMDL is established to meet the requirements of Clean Water Act and the U.S. Environmental Protection Agency's (EPA) implementing regulation which require the establishment of a TMDL for the achievement of water quality standards when a waterbody is impaired.

A TMDL is composed of the sum of any individual waste load allocations (WLA) for point sources and load allocations (LA) for nonpoint sources and future source loads. In addition, a TMDL must include a margin of safety (MOS), either implicitly or explicitly that accounts for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody.

History and Background

ADEC determined Pullen Creek did not meet the metals water quality standard in 1990. High concentrations of lead, zinc, cadmium, copper, and mercury were found in Pullen Creek sediments causing reduced infauna diversity. Additional testing in 2007 confirmed the impacts on aquatic life. Possible nonpoint sources include: sediment from residential and commercial upland areas, road maintenance, and riparian habitat modification.

Standards, Loading Capacity, and Allocations

This TMDL is based on elevated levels of metals in bottom sediments. To date, ADEC has not adopted numeric sediment quality standards however, the ADEC Contaminated Sites Remediation Program recommends using standards developed by the National Oceanographic and Atmospheric Agency. The recommended standards are the Threshold Effects Levels (TELs) and Probable Effects Levels (PELs) for evaluating sediment quality. TELs define chemical sediment concentrations below which toxic effects are rarely observed in sensitive species, while PELs define concentrations above which effects are frequently or always observed. Table 2 provides the standards and maximum observed value.

Freshwater sediment screening levels for metals of concern in Pullen Creek (Table 2)

Metal	TEL (mg/kg)	PEL (mg/kg)	Maximum Observed (mg/kg)
Cadmium	0.596	3.53	1.6
Copper	35.7	197	120
Lead	35	91.3	330
Zinc	123.1	315	480

Buchman (2008)

Note: Screening levels are included only for those metals shown to be of concern through the data analysis presented in the TMDL.

Implementation

In order to meet water quality standards, the TMDL recommends the following actions:

- Allow the metals to naturally attenuate over time through burial by "clean sediment" or being flushed through the system by high flow periods;
- Apply Best Management Practices (BMPs) to control metal infused stormwater run-off;
- Promote riparian bank stabilization and maintenance of stream buffers;
- Monitor periodically to assess natural recovery processes and loading from future point and/or nonpoint sources.

TMDL Public Review

A public review and comment period for the draft TMDL is underway. Written public comments must be mailed, faxed, e-mailed, or hand delivered to the addresses below by 4:30 p.m. on May 21st.

ADEC will hold a public information meeting to discuss the draft TMDL in Skagway from 3 to 5 p.m. on May 5th, 2010. Interested persons needing special assistance must contact ADEC to make arrangements to participate by contacting 465-5023

The draft TMDL is available at ADEC's website; <http://www.dec.state.ak.us/water/wqsar/index.htm>. or upon request by contacting the ADEC:

Brock Tabor
Alaska Dept. of Environmental Conservation
410 Willoughby Ave
Juneau, AK 99811
Brock.tabor@alaska.gov
Phone: (907) 465-5023

